BRUHAT BANGALORE MAHANAGARA PALIKE
BYATARAYANAPURA DIVISION

Name of Work: Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura

3RD & PART BILL

TEST REPORTS

TEJUS CONSULTANTS
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AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)			
Project	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Benaka Developers & Project Pvt.Ltd.		
Proposed Use	WMM	Date of Sampling	04-02-020
Sample Location	At plant	Date of Testing	04-02-020

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	350.00	360.00	350.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	274.00	273.00	271.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	76.00	87.00	79.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	21.71	24.17	22.57	
5	Average Aggregate impact value	(%)	22.82			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Benaka Developers & Project Pvt.Ltd.

Type of Material	WMM		**Proposed Use**	WMM
Sample Location	At plant		**Date of Sampling**	04-02-20
			Date of Testing	04-02-20

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	880	75	805	70
16.0	12.5	1300	120	1180	115
12.5	10.0	450	80	370	70
10.0	6.3	500	57	443	34
Total		**3130**	**332**	**2798**	**289**

Note: Minimum 200 Pcs should be taken on each fraction of test

		Flakiness Index(%):	10.61		
		Elongation Index(%):	10.33		
		Combined FI+EL (%)	20.94		

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	04-02-20
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	04-02-20
Type of material & Purpose:	WMM	**Date of testing:**	04-02-20
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	620	620	6.20	93.80	95-100
22.4	2520	3140	31.40	68.60	60-80
11.2	1730	4870	48.70	51.30	40-60
4.75	1450	6320	63.20	36.80	25-40
2.36	1330	7650	76.50	23.50	15-30
0.6	872	8522	85.22	14.78	8.0-22.0
0.075	850	9372	93.72	6.28	0-8
Pan	628				
Total	10000				

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Bangalore - 560 092

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers & Project Pvt.Ltd.
Date of Testing	:	05-02-20
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	05-02-20
Type of material & Purpose:	WMM	**Date of testing:**	05-02-20
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	650	650	6.50	93.50	95-100
22.4	2510	3160	31.60	68.40	60-80
11.2	1780	4940	49.40	50.60	40-60
4.75	1448	6388	63.88	36.12	25-40
2.36	1335	7723	77.23	22.77	15-30
0.6	860	8583	85.83	14.17	8.0-22.0
0.075	880	9463	94.63	5.37	0-8
Pan	537				
Total	10000				

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GRADATION FOR BC (As per MORT&H 500-18,Grading-2)					
Name of Work	:	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura			
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant	:	M/s Tejus Consultants			
Contractor	:	Benaka Developers & Project Pvt.Ltd.			
Date of Testing	:	28-02-20			
Type of Mix	:	BC			
Sample I/D	:	BC5			
Sample Location:	At plant		**Date of Sampling:**	28-02-20	
Type of material & Purpose:	BC		**Date of testing:**	28-02-20	
			Oven Dry Wt.(gms	1200.0	

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	160	160.0	13.33	86.67	79 - 100
9.50	125	285.0	23.75	76.25	71 - 95
4.75	210	495.0	41.25	58.75	53 - 71
2.360	140	635.0	52.92	47.08	42 - 58
1.180	130	765.0	63.75	36.25	34 - 48
0.600	70	835.0	69.58	30.42	26 - 38
0.300	105	940.0	78.33	21.67	18 - 28
0.150	85	1025.0	85.42	14.58	12 - 20
0.075	90	1115.0	92.92	7.08	4 - 10
Pan	85.0				
Total	1200.0				

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GRADATION FOR BC (As per MORT&H 500-18,Grading-2)					
Name of Work	:	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura			
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE			
Consultant	:	M/s Tejus Consultants			
Contractor	:	Benaka Developers & Project Pvt.Ltd.			
Date of Testing	:	28-02-20			
Type of Mix	:	BC			
Sample I/D	:	BC5			
Sample Location:	At plant		**Date of Sampling:**	28-02-20	
Type of material & Purpose:	BC		**Date of testing:**	28-02-20	
			Oven Dry Wt.(gms):	1200.0	
IS Sieve size in mm	**Weight retained**	**Cummulative weight retained (gm)**	**Cummulative % of retained**	**Cummulative % of passing**	**Specification limits**
19.00	0	0	0.00	100.00	100.00
13.20	150	150.0	12.50	87.50	79 - 100
9.50	125	275.0	22.92	77.08	71 - 95
4.75	210	485.0	40.42	59.58	53 - 71
2.360	150	635.0	52.92	47.08	42 - 58
1.180	130	765.0	63.75	36.25	34 - 48
0.600	98	863.0	71.92	28.08	26 - 38
0.300	80	943.0	78.58	21.42	18 - 28
0.150	85	1028.0	85.67	14.33	12 - 20
0.075	84	1112.0	92.67	7.33	4 - 10
Pan	88.0				
Total	1200.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

me of Work :	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
ient :	BRUHAT BANGALORE MAHANAGARA PALIKE
nsultant :	M/s Tejus Consultants
ntractor :	Benaka Developers & Project Pvt.Ltd.
te of Testing :	28-02-20
pe of Mix :	BC
mple I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
Weight of Mixture before extraction, g	850	843
Weight of Mixture after extraction, g	805	799
Weight of Bitumen	45	44
Weight of filter paper before extraction, g	2.00	2.00
Weight of filter paper after extraction, g	4.10	4.20
Weight of fines, g	2.10	2.20
Weight of Bitumen & fines	47.10	46.20
Bitumen content in %	5.54	5.48
Average Bitumen content in %	5.51	
Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

mple Location:	At site	Date of Sampling:	28-02-20
pe of material & pose:	BC	Date of testing:	28-02-20
		Oven Dry Wt.(gms):	805.0

Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	90	90.0	11.18	88.82	79 - 100
9.50	110	200.0	24.84	75.16	71 - 95
4.75	121	321.0	39.88	60.12	53 - 71
2.360	116	437.0	54.29	45.71	42 - 58
1.180	70	507.0	62.98	37.02	34 - 48
0.600	60	567.0	70.43	29.57	26 - 38
0.300	65	632.0	78.51	21.49	18 - 28
0.150	60	692.0	85.96	14.04	12 - 20
0.075	50	742.0	92.17	7.83	4 - 10
Pan	63.0				
Total	805.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

e of Work :	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
t :	BRUHAT BANGALORE MAHANAGARA PALIKE
sultant :	M/s Tejus Consultants
tractor :	Benaka Developers & Project Pvt.Ltd.
e of Testing :	29-02-20
e of Mix :	BC
ple I/D :	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
ight of Mixture before extraction, g	814	812
ight of Mixture after extraction, g	772	770
ight of Bitumen	42	42
ight of filter paper before extraction, g	2.00	2.00
ight of filter paper after extraction, g	4.10	4.20
ight of fines, g	2.10	2.20
ight of Bitumen & fines	44.10	44.20
umen content in %	5.42	5.44
rage Bitumen content in %	5.43	
inimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

le Location:	At site	Date of Sampling:	29-02-20
f material &	BC	Date of testing:	29-02-20
		Oven Dry Wt.(gms):	772.0

ve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	70	70.0	9.07	90.93	79 - 100
9.50	80	150.0	19.43	80.57	71 - 95
4.75	90	240.0	31.09	68.91	53 - 71
2.360	100	340.0	44.04	55.96	42 - 58
1.180	110	450.0	58.29	41.71	34 - 48
0.600	90	540.0	69.95	30.05	26 - 38
0.300	60	600.0	77.72	22.28	18 - 28
0.150	51	651.0	84.33	15.67	12 - 20
0.075	60	711.0	92.10	7.90	4 - 10
Pan	61.0				
Total	772.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to Roads in Sahakar nagara from Big market to Ayyappa Swamy Temple Via Temple Kanti Sweets and Ganesha Temple Road in ward No 07,Byatarayanapura
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers & Project Pvt.Ltd.
Date of Testing :	29-02-20
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.784	0.774	0.764
Final weight of plate after application of tack Coat (c)	Kg	0.807	0.797	0.787
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.250	0.256	0.251
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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